

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method for performing turbo decoding, comprising:  
primarily decoding signals received from a transmission system and storing the  
primarily decoded signals in ~~a specific address space~~ corresponding addresses of a memory;  
~~interleaving the primarily decoded signals stored in the memory to change their~~  
~~order and secondarily decoding the interleaved signals; and~~  
~~deinterleaving the secondarily decoded signals and storing the deinterleaved~~  
~~signals in the specific address space of the memory;~~  
~~wherein the interleaving, the secondarily decoding, and the deinterleaving are~~  
~~implemented simultaneously~~  
secondarily decoding one of the primarily decoded signals stored in the memory  
according to a predetermined function, wherein the predetermined function indicates which  
signal of the primarily decoded signals is to be secondarily decoded;  
storing the secondarily decoded signal in the same address as the address in which  
the one of the primarily decoded signals was stored; and  
repeating the secondarily decoding and the storing until all of the primarily  
decoded signals are secondarily decoded.

Reply to Office Action dated August 16, 2006

2. (Currently Amended) The method of claim 1, wherein the primary decoding and the ~~secondary decoding repeating~~ are iterated n times using a Maximum A Posteriori (MAP) algorithm.

3. (Previously Presented) The method of claim 2, wherein the primary decoding is performed using a current transmission system signal of the transmission system and an (n-1)<sup>th</sup> iteration signal of the secondarily decoded signals.

4. (Currently Amended) The method of claim 1, wherein the secondary decoding is performed using the transmission system signals of the transmission system and the primarily decoded signals.

5. (Canceled)

6. (Currently Amended) A method for performing turbo decoding, comprising:  
primarily decoding signals received from a transmission system and storing the primarily decoded signals in a specific address space corresponding addresses of a memory;  
~~interleaving the primarily decoded signals stored in the memory by secondarily~~  
decoding one of the primarily decoded signals stored in the memory according to an equation  
 $E_i(k) = E(a(k))$ , wherein  $k = 1, 2, \dots, s$  (where s is a code block size,  $E(k)$  is a MAP decoded signal, and  $a(k)$  is an interleaving function defined by an interleaver of a turbo decoder);

Reply to Office Action dated August 16, 2006

~~secondarily decoding the interleaved signals in turn;~~  
~~deinterleaving the secondarily decoded signals by an equation  $E_d(a(k)) = E(k)$ ,~~  
~~wherein  $k = 1, 2, \dots, s$  (where  $s$  is the code block size, and  $E(k)$  is the MAP decoded signal); and~~  
~~storing the deinterleaved signals in the specific address space of the memory,~~  
~~wherein the interleaving, the secondarily decoding and the deinterleaving are~~  
~~implemented simultaneously~~  
storing the secondarily decoded signals in the same address as the address in  
which the one of the primarily decoded signals is stored; and  
repeating the secondarily decoding and the storing until all of the primarily  
decoded signals are secondarily decoded.

7. (Currently Amended) The method of claim 6, wherein the primary decoding and the ~~secondary decoding repeating~~ are iterated  $n$  times using a Maximum A Posteriori (MAP) algorithm.

8. (Previously Presented) The method of claim 7, wherein the primary decoding is performed using a current transmission system signal of the transmission system and an  $(n-1)^{\text{th}}$  iteration signal of the secondarily decoded signals.

9. (Currently Amended) The method of claim 6, wherein the secondary decoding is performed using ~~the~~ transmission system signals of the transmission system and the primarily decoded signals.

10. (Canceled)

11. (Currently Amended) A method for performing turbo decoding, comprising:  
primarily decoding composite signals comprising systematic symbols  $x_k$ ,  $(n-1)^{th}$  iteration extrinsic information, and parity symbols  $y_k$ ;  
storing the primarily decoded composite signals in ~~a specific address space~~  
corresponding addresses of a memory;  
~~interleaving the signals stored in the memory and secondarily decoding the parity~~  
~~symbols  $y_k$  on the interleaved signals to generate  $n^{th}$  iteration extrinsic information; and~~  
~~deinterleaving the secondarily decoded signals and storing the deinterleaved~~  
~~signals in the specific address space of the memory;~~  
~~wherein the interleaving, the secondarily decoding and the deinterleaving are~~  
~~implemented simultaneously~~  
secondarily decoding one of the primarily decoded composite signals stored in the  
memory according to a predetermined function to generate one of the  $n^{th}$  extrinsic information,  
wherein the predetermined function indicates which signal of the primarily decoded signals is to  
be secondarily decoded;

Reply to Office Action dated August 16, 2006

storing the secondarily decoded signals in the same address as the address in which the one of the primarily decoded signals was stored; and  
repeating the secondarily decoding and the storing until all of the primarily decoded signals are secondarily decoded.

12. (Currently Amended) The method of claim 11, wherein the primary decoding and the ~~secondary decoding repeating~~ are iterated  $n$  times using a Maximum A Posteriori (MAP) algorithm.

13. (Currently Amended) The method of claim 12, wherein the primary decoding is performed using a current transmission system signal of the ~~a~~ transmission system and an  $(n-1)^{\text{th}}$  iteration signal of the secondarily decoded signals.

14. (Currently Amended) The method of claim 11, wherein the secondary decoding is performed using the transmission system signals of the ~~a~~ transmission system and the primarily decoded signals.

15. (Canceled)